

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~striketrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

1. (PREVIOUSLY PRESENTED) A method comprising:
transmitting a binding update (BU) message, containing an identifier that indicates whether there is a request for slave home agent information, directly to a master home agent from a mobile node, in a mobile IPv6 environment,
wherein the slave home agent information is information on a slave home agent that neighbors the master home agent.
2. (ORIGINAL) The method of claim 1, wherein when the identifier is set to "1", the identifier indicates that there is a request for the slave home agent information, and when the identifier is set to "0", the identifier indicates that there is no request for the slave home agent information.
3. (ORIGINAL) The method of claim 2, wherein the BU message is transmitted in a first round of a binding update/binding acknowledgement (BU/BACK) operation.
4. (PREVIOUSLY PRESENTED) A method comprising:
transmitting a binding acknowledgement (BACK) message, after receiving a binding update (BU) message containing an identifier that indicates whether there is a request for slave home agent information, containing slave home agent information, directly to a mobile node from a master home agent, in a mobile IPv6 environment.
5. (PREVIOUSLY PRESENTED) The method of claim 4, wherein the slave home agent information comprises:
an identifier that indicates whether the slave home agent information will be transmitted;
a number of slave home agents; and
at least one slave home agent address.

6. (ORIGINAL) The method of claim 5, wherein when the identifier is set to "0", the identifier indicates that the slave home agent information will not be transmitted, and when the identifier is set to a predetermined value other than "0", the identifier indicates that the slave home agent information will be transmitted.

7. (ORIGINAL) The method of claim 4, wherein the BACK message is transmitted in a first round of a BU/BACK operation.

8. (PREVIOUSLY PRESENTED) A machine-readable storage medium executing instructions which cause a processor to transmit a message, the processor transmitting a binding update (BU) message in a mobile IPv6 environment from a mobile node directly to a master home agent, containing an identifier that indicates whether there is a request for slave home agent information, wherein the slave home agent information is information on a slave home agent that neighbors a master home agent that receives the BU message.

9. (CANCELLED)

10. (PREVIOUSLY PRESENTED) A machine-readable storage medium executing instructions which cause a processor to transmit a message, the processor transmitting a binding acknowledgement (BACK) message in a mobile IPv6 environment directly to a mobile node from a master home agent, the BACK message containing slave home agent information being transmitted after receiving a binding update (BU) message containing an identifier that indicates whether there is a request for slave home agent information.

11. (PREVIOUSLY PRESENTED) The machine-readable storage medium of claim 10, wherein the slave home agent information comprises:

an identifier that indicates whether the slave home agent information will be transmitted;
a value indicating a number of slave home agents; and
at least one slave home agent address.

12. (CANCELLED)

13. (PREVIOUSLY PRESENTED) The machine-readable storage medium of claim 11, wherein slave home agent addresses are arranged in a predetermined order according to

their priority levels.

14. (PREVIOUSLY PRESENTED) A mobile node that carries out binding update (BU) in a mobile IPv6 environment, the mobile node comprising:

- a BU message transmission unit that transmits a BU message, containing an identifier that indicates whether there is a request for slave home agent information, directly to a master home agent;

- a binding acknowledgement (BACK) message reception unit that receives a BACK message, containing the slave home agent information, directly from the master home agent; and

- a slave home agent information storing unit that stores the slave home agent information contained in the BACK message,

wherein if the BACK message has not been received directly from the master home agent at a predetermined moment of time, the BU message transmission unit transmits the BU message to a new master home agent using the slave home agent information stored in the slave home agent information storing unit.

15. (PREVIOUSLY PRESENTED) A home agent that carries out binding update (BU) in a mobile IPv6 environment, the home agent comprising:

- a BU message reception unit that receives a BU message, containing an identifier that indicates whether there is a request for slave home agent information, directly from a mobile node;

- a slave home agent information transmission determination unit that determines whether to transmit the slave home agent information, requested by the mobile node, directly to the mobile node;

- a binding acknowledgement (BACK) message generation unit which generates a BACK message, containing the slave home agent information, if the slave home agent information transmission determination unit determines to transmit the slave home agent information, and generates an ordinary BACK message if the slave home agent information transmission determination unit determines not to transmit the slave home agent information; and

- a BACK message transmission unit that transmits the BACK message created by the BACK message generation unit to the mobile node.

16. (PREVIOUSLY PRESENTED) A method of discovering a home agent address in

a mobile IPv6 environment, comprising:

inserting a slave home agent address information request into a first binding update (BU) message; and

transmitting the first BU message directly to a master home agent from a mobile node.

17. (ORIGINAL) The method of claim 16, further comprising:

upon not receiving a binding acknowledgement (BACK) message from the master home agent at a predetermined time, inserting the slave home agent address information request into a second BU message; and

transmitting the second BU message to a slave home agent,

wherein the slave home agent was identified in a previous BACK message, which included slave home agent information, and which was received from the master home agent in response to a previous BU message that included the slave home agent address information request.

18. (ORIGINAL) The method of claim 16, wherein the first BU message comprises a home agent address request identification field to indicate whether slave home agent information is needed.

19. (ORIGINAL) The method of claim 17, wherein the second BU message comprises a home address request identification field to indicate whether the slave home agent information is needed.

20. (ORIGINAL) The method of claim 16, further comprising:

receiving a binding acknowledgement (BACK) message from the master home agent.

21. (ORIGINAL) The method of claim 20, wherein the BACK message comprises a status field to indicate whether slave home agent information is included.

22. (ORIGINAL) The method of claim 21,

wherein the BACK message comprises slave home agent information when the status field indicates that the slave home agent information is included, and

wherein the BACK message does not comprise slave home agent information when the status field indicates that the slave home agent information is not included.

23. (ORIGINAL) The method of claim 22, wherein the BACK message comprises a number-of-slave home agents field to indicate a number of candidate slave home agents of higher priority levels.

24. (ORIGINAL) The method of claim 23,
wherein the number-of-slave home agents field includes the number of candidate slave home agents of higher priority levels when the status field indicates that the slave home agent information is included, and

wherein the number-of-slave home agents field does not include the number of candidate slave home agents of higher priority levels when the status field indicates that the slave home agent information is not included.

25. (ORIGINAL) The method of claim 23, wherein the BACK message further comprises a home agent address field to indicate addresses of the candidate slave home agents, which are arranged in a predetermined order according to corresponding priority levels.

26. (ORIGINAL) The method of claim 25,
wherein the home agent address field includes the addresses of the candidate slave home agents when the status field indicates that the slave home agent information is included, and

wherein the home agent address field does not include the addresses of the candidate slave home agents when the status field indicates that the slave home agent information is not included.

27. (ORIGINAL) The method of claim 25, further comprising:
selecting the slave home agent based on the priority levels of the candidate slave home agents.

28. (NEW) The method of claim 1, wherein if the identifier indicates that there is the request for the slave home agent information, a binding acknowledgement (BACK) message containing the slave home agent information is received from the master home agent, and if the identifier indicates that there is no request for the slave home agent information, a binding

acknowledgement (BACK) message containing no slave home agent information is received from the master home agent.

29. (NEW) The method of claim 4, wherein if the identifier indicates that there is the request for the slave home agent information, a binding acknowledgement (BACK) message containing the slave home agent information is received from the master home agent, and if the identifier indicates that there is no request for the slave home agent information, a binding acknowledgement (BACK) message containing no slave home agent information is received from the master home agent.

30. (NEW) The machine-readable storage medium of claim 8, wherein if the identifier indicates that there is the request for the slave home agent information, a binding acknowledgement (BACK) message containing the slave home agent information is received from the master home agent, and if the identifier indicates that there is no request for the slave home agent information, a binding acknowledgement (BACK) message containing no slave home agent information is received from the master home agent.

31. (NEW) The machine-readable storage medium of claim 10, wherein if the identifier indicates that there is the request for the slave home agent information, a binding acknowledgement (BACK) message containing the slave home agent information is received from the master home agent, and if the identifier indicates that there is no request for the slave home agent information, a binding acknowledgement (BACK) message containing no slave home agent information is received from the master home agent.

32. (NEW) A mobile node of claim 14, wherein if the identifier indicates that there is the request for the slave home agent information, a binding acknowledgement (BACK) message containing the slave home agent information is received from the master home agent, and if the identifier indicates that there is no request for the slave home agent information, a binding acknowledgement (BACK) message containing no slave home agent information is received from the master home agent

33. (NEW) The home agent of claim 15, wherein if the identifier indicates that there is the request for the slave home agent information, a binding acknowledgement (BACK) message containing the slave home agent information is received, and if the identifier indicates that there is no request for the slave home agent information, a binding acknowledgement (BACK) message containing no slave home agent information is received.

34. (NEW) The method of claim 16, wherein if there is a request for the slave home agent information, a binding acknowledgement (BACK) message containing slave home agent information is received, and if there is no request for the slave home agent information, a binding acknowledgement (BACK) message containing no slave home agent information is received.